Non Patent Literature 2: Shubhada et al., 2012, Biochemical genetics, Vol. 50, No. 7-8, pp. 625-41

Non Patent Literature 3: Tanaka et al., 2007, EMBO Journal, 26:3250-3259

Summary

[0007a] In one aspect, the present disclosure provides a peptide, wherein (a) 5% or more and less than 45% of amino acids contained in an amino acid sequence thereof are acidic amino acids, and (b) 20% or more, and preferably 30% or more of the amino acids contained in the amino acid sequence are amino acids selected from the group consisting of F, P, Y, G, S, Q, N, and A, and the peptide is capable of reducing an aggregation property in a cell of a protein linked to the peptide.

[0007b] In another aspect, the present disclosure provides a peptide having an amino acid sequence set forth in any one of SEQ ID NOs: 2 to 11.

[0007c] In another aspect, the present disclosure provides a nucleic acid encoding the peptide according to the disclosure.

[0007d] In another aspect, the present disclosure provides a protein expression vector comprising: the nucleic acid according to the disclosure operably linked to a regulatory sequence; and a nucleic acid encoding a protein of interest in-frame to the nucleic acid according to the disclosure.

[0007e] In another aspect, the present disclosure provides a fusion protein of the peptide according to the disclosure and a protein of interest.

[0007f] In another aspect, the present disclosure provides a protein-producing cell comprising: the nucleic acid according to the disclosure operably linked to a regulatory sequence; and a nucleic acid encoding a protein of interest in-frame to the nucleic acid according to the disclosure.

[0007g] In another aspect, the present disclosure provides a method for selecting or identifying an amino acid sequence, comprising: acquiring an amino acid sequence in which: (a) 5% or more and less than 45% of amino acids contained in the amino acid sequence are acidic amino acids; and (b) 20% or more of the amino acids contained in the amino acid sequence are amino acids selected from the group consisting of F, P, Y, G, S, Q, N, and A; selecting or identifying an amino acid sequence of a peptide tag that, when a fusion protein of the peptide tag having the selected or identified amino acid sequence and a reference protein is expressed in a mammal cell (preferably in a human cell), provides reduction of a proportion of cells in which the fusion protein forms an aggregation, or the proportion which is not more than a predetermined value; and obtaining the peptide tag having the amino acid sequence or a nucleic acid encoding the peptide tag.

Detailed Description

[0008]

The present disclosure provides a peptide tag, and a nucleic acid encoding the peptide tag. The peptide tag of the present disclosure can reduce the aggregation property of a protein in a cell.

[0009]

The present inventors made earnest studies on peptide tags having various amino acid sequences, resulting in finding a peptide tag having an effect of reducing an aggregation property of a protein in a cell.

[0010]

The present disclosure provides the following inventions:

[1] A peptide having an amino acid sequence with a length of, for example, 600 amino acids or less, for example, 10 to 200 amino acids (for example, 10 to 90 amino acids),

wherein (a) 5% or more and less than 45% of amino acids contained in the amino acid sequence are acidic amino acids, and